

## REMOVAL OF ELWHA AND GLINES CANYON DAMS

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Drawings are currently being prepared to document the existing structure dimensions and details for both dams. While specific methods have been developed by Reclamation for removal of both dams for purposes of preparing cost estimates, prospective contractors will submit technical and cost proposals for dam removal during the contract procurement process. This concept, called *Unegotiated procurement*,<sup>2</sup> should result in the optimum dam removal plan for the lowest overall cost. The specifications will provide dam removal limits and technical requirements which must be included in the technical proposals.

**Elwha Dam:** All existing materials placed within the original river channel at Elwha Dam during construction are to be removed, including approximately 200,000 yd<sup>3</sup> of earth and rockfill upstream of the dam, and 26,000 yd<sup>3</sup> of concrete in the dam structures. About one-fourth of this material may be left on site to provide natural-looking contours on the left abutment above the river channel. All excavated materials not used for site restoration will be hauled to an approved waste disposal facility. Mechanical and electrical items to be removed from the site have an estimated total weight of nearly 2.5 million pounds (1,240 tons).

**Glines Canyon Dam:** As currently planned, no materials would be required to be placed within the reservoir area for the removal of Glines Canyon Dam. A small, rockfill cofferdam may be constructed across the river channel just upstream of the powerhouse to facilitate removal activities below the dam during diversion releases through the power penstock. The rockfill cofferdam would be removed prior to diversion releases over the lowered dam crest through excavated notches. The initial reservoir drawdown planned for June through October, 2008, would allow the early erosion and natural redistribution of the coarser delta sediments closer to the dam prior to commencement of dam removal activities. Between one-half and two-thirds of the existing reservoir sediments are expected to be eventually eroded and removed from the reservoir sites.

The concrete structures to be removed from the river channel at Glines Canyon Dam have a total volume of nearly 16,000 yd<sup>3</sup>. Mechanical and electrical items to be removed from the site have an estimated total weight of approximately 200,000 pounds (100 tons). The dike embankment to be removed from the left abutment (above the waterline) has a volume of about 2,400 yd<sup>3</sup>, which could provide a source of materials for reshaping the construction areas. All waste materials from the removal of Glines Canyon Dam are to be removed from the site for disposal outside the national park.

**Waste Disposal:** For cost estimating purposes, suitable waste disposal sites are assumed to be located within 10 miles of Elwha Dam and 20 miles of Glines Canyon Dam.

Uncontaminated rock and earth could be used at any number of local mines as backfill against unreclaimed (over-steepened) high walls, for little or no cost. There were 19 DNR-permitted surface mines identified in 1995 within 10 miles of Elwha Dam.

Unreinforced concrete and rock may meet Washington State Department of Transportation specifications for aggregate (synthetic gravel) or fill when crushed, and could therefore be recycled. Davis Sand and Gravel expressed an interest in recycled materials in 1995. Mechanical and electrical equipment, and reinforcing steel, would be salvaged to the extent possible, with the remaining materials wasted in an approved landfill. Timber and fir mattress materials would be wasted in an approved landfill. Reservoir sediments rich in clay and organic materials may be used as topsoil.

**References:** "Removal of Elwha and Glines Canyon Dams", Elwha Technical Series PN-95-7, Bureau of Reclamation, Pacific Northwest Region, Boise, Idaho, May 1996.